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EXAMINER	
LUI, DONNA V	
ART UNIT	**PAPER NUMBER**
2675	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,478	LIN, CHE-LI	
	Examiner	Art Unit	
	Donna V. Lui	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-4, 7-9, 11, 13-15, 17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art (herein after referred to as "AAPA") in view of Keely Jr et al. (Patent No.: 6,756,970).

With respect to **Claim 1**, the AAPA discloses a backlight unit for flat panel displays (FPD). The AAPA teaches the backlight unit to comprise a lightguide *(figure 1, 32)*, providing light propagating paths *([0006], lines 3-4)*; a lamp *(38)*, disposed beside the lightguide to emit lights into the lightguide in an edgelight form, the lights into the lightguide can propagate therethrough in a total reflection form *([0006], lines 5-7)*; optical films *(34)* are disposed on the lightguide for scattering lights emitted from the lightguide uniformly *([0006], lines 1-12)*; an antenna array layer *(42)* and a reflector surface layer *(36)*, where the antenna array layer is

applied to receive inputting signals from a hand-held stylus *([0007], lines 3-6)*, and the reflector surface layer is applied to reflect lights dispersed from the lower surface of the lightguide *([0006], lines 8-10)*.

The AAPA teaches a sensor board *(42)* but the sensor board is not attached to a lower surface of the lightguide comprising an antenna array layer and a reflector surface layer.

Keely discloses a flat panel display in which a digitizer is integrated. Keely teaches a sensor board *(figure 1, 56 and 60)* attached to a lower surface of the lightguide *(54; column 4, lines 13-14)* comprising an antenna array layer *(60; column 4, lines 22-23)* and a reflector surface layer *(56)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a sensor board attached to the lower surface of the lightguide comprising an antenna layer and reflector layer, as taught by Keely, to the backlight unit of the AAPA for the purpose of integrating digitization technology into a display module *(column 2, lines 15-17)*, and to provide materials and processing techniques which when applied to device construction will yield further improvements in pen display performance and quality *(column 2, lines 27-30)*.

With respect to **Claim 7**, the AAPA discloses a flat panel display. The AAPA teaches a flat panel display *(figure 1)* comprising a display module *(20)*, having a lower glass substrate *(24)* for fabricating thin film transistors *([0005], lines 12-13)*, an upper glass substrate *(22)*, a displaying molecule layer inserted between the lower glass substrate and the upper glass substrate *([0005], lines 5-6)*, where the lower glass substrate is connected electrically to a control

circuit board via a flexible printed circuit board for driving the thin film transistor *([0005], lines 9-13)*; a backlight unit *(30)*, fabricated beneath the display module *(20)*, having a lightguide *(32)*, a lamp disposed aside the lightguide to emit lights into the lightguide in an edgelight form *(38; [0006], lines 4-5)*, and optical films for scattering lights emitted from an upper surface of the lightguide uniformly *(34; [0006], lines 10-12)*. The AAPA teaches a sensor board for receiving inputting signals from a hand-held stylus above the flat panel display *([0007], lines 3-6)*. The AAPA teaches a reflector surface layer for reflecting lights dispersed from the lower surface of the lightguide *(36; [0006], lines 8-10)*; where the flexible printed circuit board is wound downward around a sidewall of the backlight unit to have the control circuit board be attached beneath the backlight unit *([0008], lines 2-4)*, where the control circuit board is connected electrically to the sensor board via a connecting bus to decode signals received by the sensor board *([0007], lines 6-10)*.

The AAPA does not teach an upper glass substrate for fabricating a color filter. The AAPA does not teach optical films disposed on the lightguide nor does the AAPA teach a backlight unit with a sensor board attached to the lower surface of the lightguide where the sensor board comprises a reflector surface layer.

Keely discloses a flat panel display in which a digitizer is integrated. Keely teaches an upper substrate for fabricating a color filter *(figure 7, upper substrate ~ front glass (34), color filter (130))*. Keely teaches optical films *(figure 1, 50)* disposed on the lightguide and a backlight unit comprising a sensor board *(figure 1,56 and 60)* attached to the lower surface of the lightguide *(figure 1, lightguide~lightpipe; column 4, lines 14-15)* where the sensor board comprises a reflector surface layer *(56)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use an upper substrate for fabricating a color filter, disposing optical films on the lightguide and have a backlight unit comprising a sensor board attached to the lower surface of the lightguide where the sensor board comprises a reflector surface layer, as taught by Keely, to the flat panel display of the AAPA for the purpose of integrating digitization technology into a display module *(column 2, lines 15-17)*, and to provide materials and processing techniques which when applied to device construction will yield further improvements in pen display performance and quality *(column 2, lines 27-30)*.

With respect to **Claim 14**, the claim differs from claim 7 only in that the limitation "wherein said flexible printed circuit board is wound downward around a sidewall of said backlight unit to have said control circuit board be attached beneath said backlight unit, wherein said control circuit board is connected electrically to said sensor board via a connecting bus to decode signals received by said sensor board" is recited in claim 7 and claim 14 recites the limitation "a liquid crystal molecule layer, disposed between said upper glass substrate and said lower glass substrate". The AAPA teaches a liquid crystal molecule layer, disposed between said upper glass substrate and said lower glass substrate *([0005], lines 5-7)*.

With respect to **Claim 2**, AAPA teaches the backlight unit to further comprise a reflector cover *(figure 1, 39)* disposed around the lamp to reflect and concentrate lights of the lamp into the lightguide *([0006], lines 7-8)*.

With respect to **Claim 3**, AAPA teaches the backlight unit where optical films *(34)* comprise diffuser films and brightness enhancing films for scattering lights emitted from the lightguide more uniformly *([0006], lines 10-12)*.

With respect to **Claim 4**, AAPA does not teach the backlight unit where optical films comprise upper diffuser films, brightness enhancing films and lower diffuser films.

Keely teaches the backlight unit where optical films *(figure 1, 50)* comprise upper diffuser films *(DIFF)*, brightness enhancing films *(BEF)* and lower diffuser films *(DIFF)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use optical films comprising upper diffuser films, brightness enhancing films, and lower diffuser films, as taught by Keely, to the backlight unit of the AAPA for the purpose of achieving high performance input in combination with a thin film transistor display *(column 2, lines 31-34)*.

With respect to **Claim 8**, the AAPA teaches the displaying molecule layer is made of liquid crystal molecules *(p. 1, [0005], lines 6-9)*.

With respect to **Claims 9 and 15**, The AAPA does not teach the sensor board having a thickness of 0.4~0.8 mm and comprising an antenna array layer and a reflector surface layer.

Keely teaches a sensor board *(figure 1, 56 and 60)* comprising an antenna layer *(60, the antenna layer is equivalent to the digitizer grid)* and a reflector surface layer *(56)*, where each

component of the sensor board is 0.2 mm resulting in a sensor board thickness of 0.4 mm *(column 3, lines 49-51)*. The sensor board thickness falls within the range of 0.4~0.8 mm.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a sensor board thickness of 0.4~0.8 mm comprising an antenna array later and a reflector surface layer, as taught by Keely, to the flat panel display of the AAPA for the purpose of providing materials and processing techniques which when applied to device construction, yield improvements in pen and display performance and quality *(column 2, lines 27-30)*.

With respect to **Claims 11 and 17**, the AAPA does not teach the reflector surface layer having a thickness of 0.2~0.4 mm and is fabricated on the antenna array layer.

Keely teaches the reflector surface layer *(56)* having a thickness of 0.2 mm *(See figure 1, layer 56 designated as 0.2; column 3, lines 49-51)* and is fabricated on the antenna array layer *(60)*. It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a reflector surface layer having a thickness of 0.2 mm fabricated on the antenna array later, as taught by Keely, to the flat panel display of the AAPA for the purpose of providing materials and processing techniques which when applied to device construction, yield improvements in pen and display performance and quality *(column 2, lines 27-30)* and to integrate electromagnetic pen digitization technology into a display module *(column 2, lines 15-17)*.

With respect to Claims **13 and 19**, the AAPA does not mention the flat panel display further comprising a timing control chip fabricated on said control circuit board to provide timing control signals for driving said thin film transistors and executing a logical function of decoding said signals received by said sensor board.

Keely teaches an electronics layer *(figure 1, 20)* which is equivalent to a control circuit board *(figure 3, 72)*. The control circuit board includes electronics for display and for the digitizer layer *(column 3, lines 58-64)*. Therefore, it is evident that the timing control chip is on the control circuit board in order to provide the timing control signals for driving the thin film transistors and executing a logical function of decoding said signals received by said sensor board.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a timing control chip fabricated on the control circuit board to provide timing control signals for driving the thin film transistors and executing a logical function of decoding the signals received by the sensor board, as taught by Keely, to the flat panel display of the AAPA for the purpose of integrating electromagnetic pen digitization technology into a display module *(column 2, lines 15-17)*, provide materials and processing techniques which when applied to device construction yield further improvements in pen and display performance and quality *(column 2, lines 27-30)*, and to provide electromagnetic pen digitizer construction which achieves high performance input in combination with a thin film transistor display *(column 2, lines 31-34)*.

3. **Claim 5, 10 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Keely as applied to claims 1-4, 7-9, 11, 13-15, 17 and 19 above, and further in view of Dening (Pub No.: 2003/0201938).

With respect to **Claims 5 and 10**, note the above discussion of the AAPA and Keely. The AAPA does not teach the materials of the antenna array of the backlight unit are chosen from a group of FR4 and FPC, where the antenna array has a thickness of 0.2~0.4 mm.

Keely teaches the materials of the antenna array to comprise an insulated flexible printed circuit board *(FPC, column 4, lines 33-35)*, where the antenna array has a thickness of 0.2 mm *(figure 1, 60; column 3, lines 49-51)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use materials for an antenna array to comprise a flexible printed circuit and have a thickness of 0.2 mm, as taught by Keely, to the backlight unit of the AAPA for the purpose of providing materials and processing techniques which when applied to device construction, yield improvements in pen and display performance and quality *(column 2, lines 27-30)*.

Both the AAPA and Keely do not mention the material of the antenna array to further comprise FR4. Dening teaches an antenna formed from FR4 *(p. 2, [0028], lines 7-8)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use an antenna formed from FR4, as taught by Dening to the backlight unit of the AAPA, as modified by Keely for the purpose of separating various components *(p. 2,*

[0028], line 7) and for forming a substrate for other electrical components *(p. 1, [0008], lines 5-6)*.

With respect to **Claim 16**, the claim differs from claim 5 in that the limitation " wherein said sensor board further comprises" is additionally recited. Both the AAPA and Keely teach a sensor board *(e.g. 42 in AAPA and 60 in Keely)*.

4. **Claims 6, 12, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Keely as applied to claims 1-4, 7-9, 11, 13-15, 17 and 19 abovee, and further in view of Gettemy (Patent No.: 6,603,469).

With respect to **Claims 6, 12 and 18**, note the above discussion of the AAPA and Keely. This claim differs from claim 11 in that the limitation "disposed under said antenna array layer" is additionally recited.

Both the AAPA and Keely do not teach the reflector surface layer as being disposed under the antenna array layer.

Gettemy teaches a reflector surface layer is disposed under the antenna array layer *(figure 12, 640; antenna array layer ~ 610; transreflector ~ 640)*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a reflector disposed under the antenna array layer, as taught by Gettemy, to the backlight unit of the AAPA, as modified by Keely, for the purpose of providing

reflective light for monochrome applications and bright light color applications *(column 2, lines 30-32)*.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Depew (Patent No.: 6,215,476) is cited to teach a flat panel display with integrated electromagnetic pen digitizer where the antenna thickness is 0.3~0.5 mm.

b. Ely (Pub No.: 2001/0006369) is cited to teach a sensor board thickness of 0.2 mm with control circuitry residing beneath the sensor board.

c. Kitagawa (Patent No.: 6,339,418) is cited to teach a flat panel display with a reflector sheet thickness of 0.2 mm.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donna V Lui
Examiner
Art Unit 2675

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER